



# Application Note

Continuous and automated monitoring for the detection of odorous nuisances from bituminous conglomerate production plants

**INTRODUCTION:** Odorous emissions represent a significant challenge in the bituminous conglomerate production sector. Italian and European environmental regulations, such as **Legislative Decree 152/2006**, require companies to monitor and reduce the impact of odorous nuisances, to ensure air quality and public welfare. On a local level, regions and municipalities adopt strict regulations to limit odorous nuisances, and the **Integrated Environmental Authorization (AIA)** mandates effective preventive and corrective measures.

**ANALYTICAL SOLUTION:** Pollution Analytical Equipment, in collaboration with PIN—Educational and Scientific Services for the University of Florence, and SITEB—Strade Italiane e Bitumi, has developed an innovative solution for **continuous and automated monitoring** for the detection of **odorous nuisances** from bituminous conglomerate production plants.

This system is designed to **assist in managing issues** related to odorous emissions, providing companies with an advanced tool for real-time control.

The solution is based on an **advanced analytical** system that utilizes **gas chromatography technology** to perform **onsite chemical analysis** of odorous emissions, capturing real-time data and allowing the plant manager to monitor and promptly address any potential issues.

The main advantages are:

1. **Flexibility:** Adaptable to various production setups, the solution is configured according to the plant's needs and provides relevant data even in the case of process variations.
2. **Reliability:** Onsite chemical analysis guarantees **precise and reliable data** for an accurate assessment of odorous emissions and their potential impact on the surrounding environment.
3. **Reproducibility and repeatability:** The same technology can be installed at different monitoring points (ducted, diffuse, and perimeter emissions), guaranteeing **quality and sturdiness**.
4. **Management support:** The system aids in improving plant management by providing **precise and prompt information** on odorous emissions, reducing environmental impact, and facilitating the optimization of production activities.
5. **Weather control units:** Available with an **integrated weather control unit** version to assess odorous nuisance dispersion variables.
6. **Integration with dispersion models:** Supports the **creation of dispersion maps** by integrating with modeling systems to verify emission fallout points.

**MONITORING SERVICE:** The odorous nuisance monitoring solution consists of **three phases**:

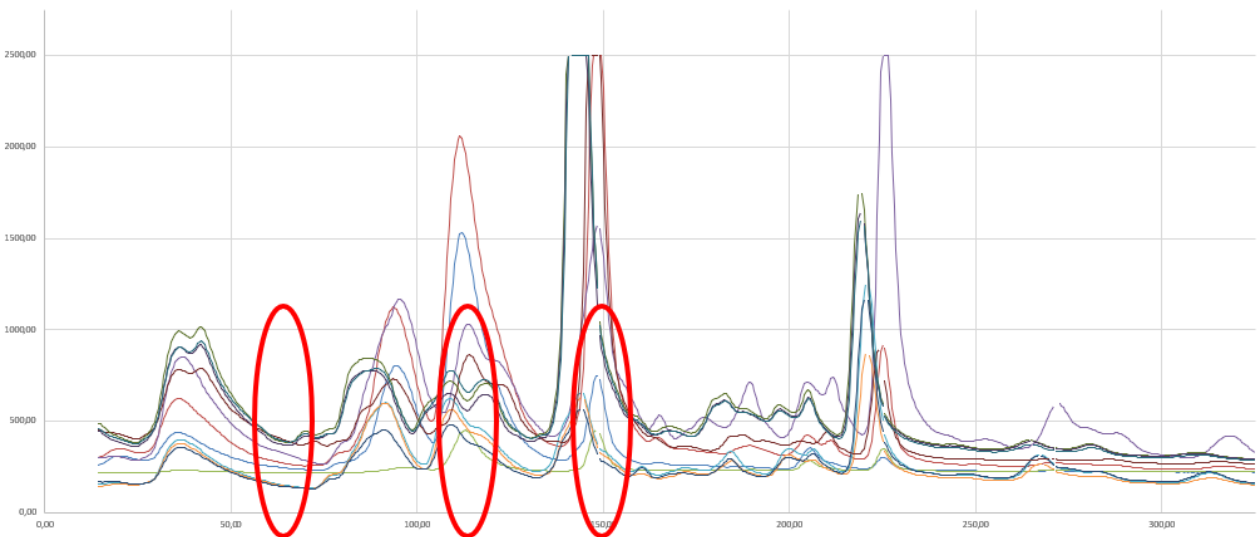
**PHASE 1: PRELIMINARY STUDY AND INSTRUMENT TRAINING**

The process begins with sampling and laboratory analyses conducted by PIN S.c.r.l., aimed at characterizing the plant's different **production setups** and implementing the corresponding odour profiles. This study phase aims to **train the monitoring device** that will be installed in the field, adapting it to the site's emission characteristics.

**PHASE 2: EMISSIONS MONITORING AND CHARACTERIZATION**

Once training is complete, **continuous monitoring** of the emissions produced in the plant begins.

- **Ducted emissions:** the device installed at the duct continuously verifies both the odour profile and the concentrations of specific markers identified in the preliminary study.
- **Diffuse and perimeter emissions:** By comparing the duct odor profile with the profiles detected by the device at other monitoring points, it is possible to verify the potential dispersion of the odorous nuisance.



### PHASE 3: DEFINITION OF PRE-ALERT TRESHOLDS

In the final phase, **pre-alert thresholds** are established based on the data collected and the developed profile. These thresholds allow for the anticipation of potential critical situations, triggering preventive measures to prevent emissions from exceeding environmental tolerance levels, thereby contributing to more efficient and proactive odour emission management.

**CONCLUSIONS:** This solution represents a step forward in effectively and proactively addressing the challenges associated with odorous nuisances in bituminous conglomerate production plants, offering technological tools that support companies in managing operations with a focus on environmental sustainability.

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